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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/620,186	07/15/2003	Robert J. Gartside	ABBLUM/261/US	8685

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EXAMINER

DANG, THUAN D

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 08/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/620,186

Applicant(s)

GARTSIDE ET AL.

Examiner

Thuan D. Dang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1/23/06.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 15-18, 21, and 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is unclear if there is any reaction in the step of contacting the mixture of C4 olefins and ethylene. If so, what are the reactants?

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-14, 19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schwab et al (6,271,430) in view of the admitted prior art.

Schwab discloses a process including a step of autometathesis of a C4 stream containing butenes, isobutene, and paraffins in the presence of a catalyst of group VI metal to react butene-1 and butene-2 to produce a product containing ethylene, pentene, propylene (col. 2, line thru col. 3, lines 46).

At least a portion of isobutene is expected inherently to participate in the Schwab autometathesis reaction with butenes.

Schwab discloses that the product is separated into streams including ethylene, propylene (as the desired product), butane(s), and heavier olefins (figures; col. 4, lines 5-25).

Schwab discloses that the heavier olefinic stream mixed with ethylene recovered from the autometathesis effluent and fresh ethylene is fed to another metathesis reactor in which additional propylene is produced (see figure).

As discussed above, the examine recognizes there are several minor differences from the claimed process and the present process. (1) Schwab does not disclose recover isobutylene after

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the autometathesis reaction, (2) Schwab does not disclose the ratio of the molar ratio of the external fresh ethylene to the n-butenes in the C4 olefinic stream.

However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Schwab process by removing unreacted isobutylene from the autometathesis process if the isobutylene is not needed in the later reaction.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Schwab process by selecting an appropriate amount of fresh ethylene fed to the second metathesis since this amount depends on the amount of ethylene recovered from the autometathesis reaction. Further, the concentration of the reactants in the a reaction is a parameter which must be selected to optimize the process. It has been held by the patent law that the selection of reaction parameters such as temperature and concentration would have been obvious. More particularly, where the general conditions of the claimed are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Aller* 105 USPQ 233, 255 (CCPA 1955). *In re Waite* 77 USPQ 586 (CCPA 1948). *In re Scherl* 70 USPQ 204 (CCPA 1946). *In re Irmischer* 66 USPQ 314 (CCPA 1945). *In re Norman* 66 USPQ 308 (CCPA 1945). *In re Swenson* 56 USPQ 372 (CCPA 1942). *In re Sola* 25 USPQ 433 (CCPA 1935). *In re Dreyfus* 24 USPQ 52 (CCPA 1934).

As admitted in the specification on page 4, lines 18-27, removing isobutene by catalytic hydroisomerization deisobutylenizer is well-known.

As admitted on page 1, lines 22-31 of the specification, one having ordinary skill in the art would recognize that the cracked C4 stream also contains butadiene. Obviously, the amount of butadiene in the stream for the autometathesis must be selected as called for in claims 4 and 5.

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Schwab uses a group VI metal supported on silica (col. 6, line 35 thru col. 7, line 15). Although, Schwab does not disclose specifically using tungsten, It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Schwab process by using tungsten since it expected that using any group VI metal would yield similar results.

As admitted on page 3, lines 4-16, using isomerization group IIA metal catalyst within the metathesis reaction is common.

Response to Amendment & Argument

The declaration under 37 CFR 1.132 filed 7/21/2006 is insufficient to overcome the rejection of claims 1-14, 19, and 20 based upon Schwab et al (6,271,430) as set forth in the last Office action because:

The declaration that in the prior art process, 2-pentene is reacted with ethylene to give 1-butene and propylene, the net reaction of 2-butene and ethylene to form 2 propylene is not persuasive since applicants do not claim what kinds of reaction occur in the metathesis step.

The declaration that claim 1 provides that the second metathesis stage involves a reaction between a C4+ stream and ethylene is not persuasive since applicant do not claim any reaction in the second metathesis step.

The declaration that the claimed process increase 12-24% compared with a conventional process for producing propylene is not persuasive since the claimed process is not the exemplified process. it has been established that evidence of unobviousness must be commensurate in scope with the claims. *In re Kulling* 14 USPQ 2d 1056, 1058 (Fed. Cir. 1990);

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In re Clemans 206 USPQ 389 (CCPA 1980); *In re Dill* 202 USPQ 805, 808 (CCPA 1979); *In re Greenfield* 197 USPQ 227 (CCPA 1978); *In re Lindner* 173 USPQ 356, 358 (CCPA 1972); *In re Hyson* 172 USPQ 399 (CCPA 1972); *In re Tiffin* 171 USPQ 294 (CCPA 1971); *In re McLaughlin* 170 USPQ 209 (CCPA 1971); *In re Kennedy* 168 USPQ 587 (CCPA 1971); *In re Law* 133 USPQ 653 (CCPA 1962).

The declaration that exhibit A and B shows that raffinate II is derived from a C4 stream after isobutene have been removed is not persuasive since the raffinate II in the reference contains 1 to 2 wt% of isobutene.

Allowable Subject Matter

Claims 15 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

Claims 16-18, 21 and 22 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thuan D. Dang whose telephone number is 571-272-1445. The examiner can normally be reached on Mon-Thu.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Thuan D. Dang
Primary Examiner
Art Unit 1764

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A handwritten signature in black ink, appearing to be 'Thuan D. Dang', written in a cursive style.